



Country Analysis Executive Summary: Canada

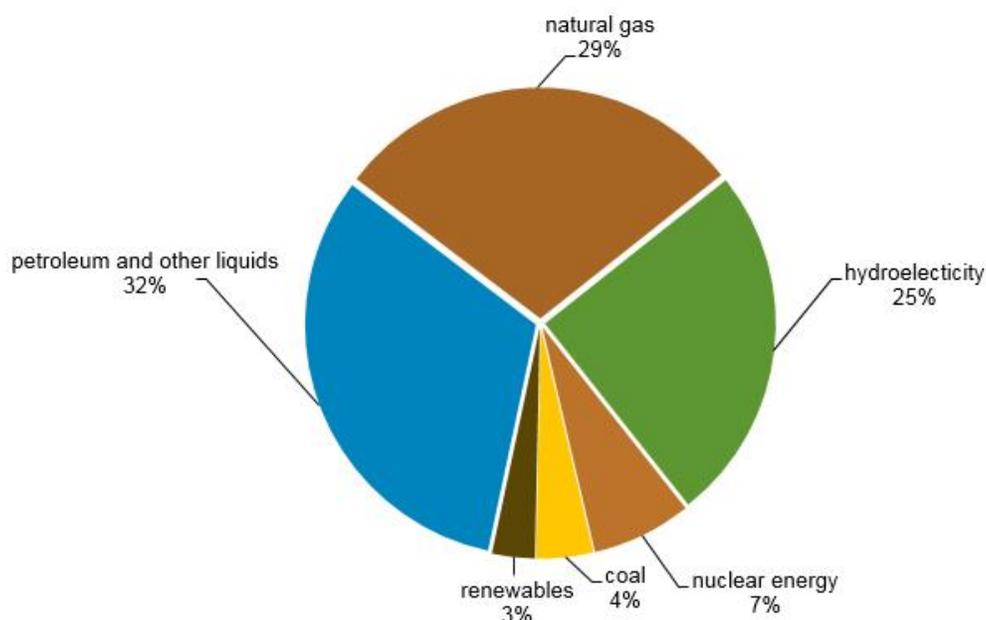
Last Updated: October 7, 2019

Overview

Canada is one of the world's top energy producers and is a principal source of U.S. energy imports.

- Canada is a net exporter of most energy commodities and is a significant producer of natural gas, hydroelectricity, and crude oil and other liquids from oil sands. [Energy exports to the United States](#) account for most of Canada's total energy exports.
- Canada has abundant and varied natural resources, ranking fourth in 2018 among the top energy producers of petroleum and total liquids in the world, behind only the United States, Saudi Arabia, and Russia. Relatively energy intensive compared with other industrialized countries, Canada's economy is fueled largely by petroleum and other liquids, natural gas, and hydroelectricity (Figure 1).

Figure 1. Total primary energy consumption in Canada by fuel type, 2018



Source: BP Statistical Review of Energy, 2019

Petroleum and other liquids

Canada's oil sands have significantly contributed to the recent and expected future growth in the world's liquid fuel supply, and they comprise most of the country's proved oil reserves, which rank third globally.

Reserves

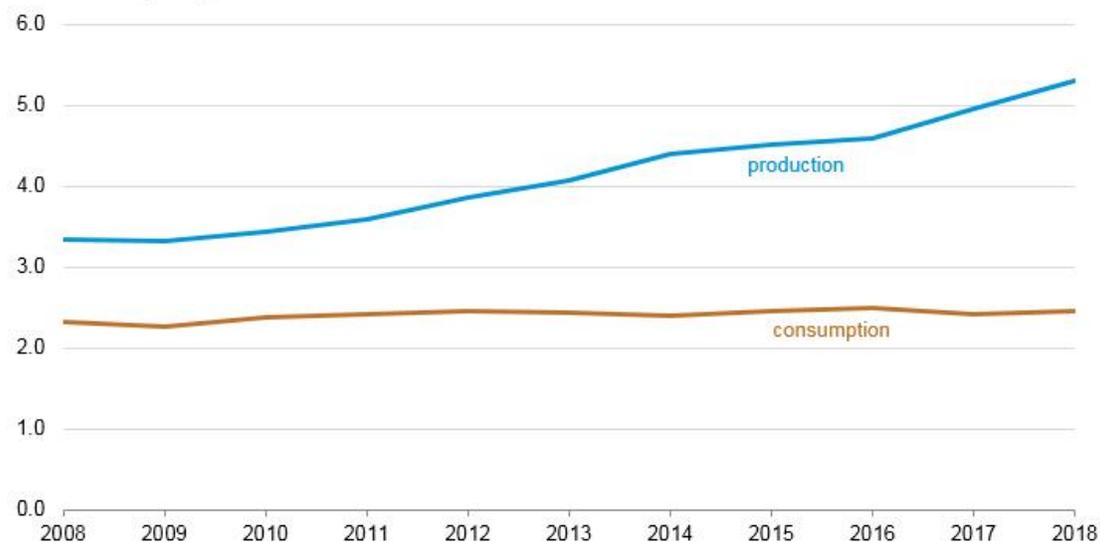
- The *Oil & Gas Journal* estimates that as of January 2019, Canada had 167 billion barrels of proved oil reserves, ranking third in the world.¹ Only Venezuela and Saudi Arabia hold higher reserves. In addition, Canada is one of only 3 countries among the top 10 proved reserves holders that is not a member of the Organization of the Petroleum Exporting Countries (OPEC).

Production and Consumption

- In 2018, Canada was the world's fourth-largest petroleum and other liquids producer and was a net exporter of oil. Nearly all of its crude oil exports are destined for the United States because Canada lacks sufficient export capacity to send its liquids elsewhere.

Figure 2. Canada liquid fuels production and consumption

million barrels per day



Source: U.S. Energy Information Administration, *Short-Term Energy Outlook*

- Canada is a major producer of crude oil. Bitumen and upgraded synthetic crude oil produced from the oil sands of Alberta has driven recent growth in Canada's liquid fuels production. Most of Canada's proved oil reserves and the expected future growth in the country's liquid fuels production will be derived from these resources.
- Canada produced 5.3 million barrels per day (b/d) of petroleum and other liquid fuels in 2018, an increase of more than 300,000 b/d from the previous year. Crude oil (including condensate) accounted for 4.3 million b/d, and the remainder was produced as biofuels, natural gas, and other natural gas liquids (NGL) (Figure 2). Canada's production is expected to grow modestly in 2019 and 2020 because of export capacity constraints and mandatory production curtailments set by the government of Alberta.

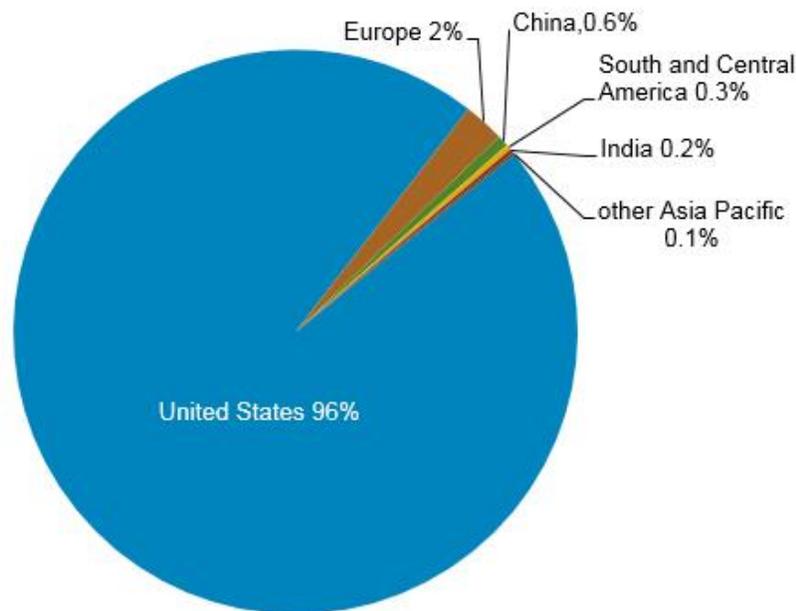
Refining

- According to the Canadian Association for Petroleum Producers (CAPP), Canada has 17 refineries with a total crude oil processing capacity of 2.0 million b/d.² Eastern Canada's eight refineries have 1.2 million b/d of capacity, or about 60% of total crude oil refining capacity.³ Because the eastern refineries are not as well connected to domestic crude oil production supplies, these refineries are more dependent on imported crude oil. Western Canada's nine refineries have a total capacity of 748,000 b/d. In 2018, the Phase One of the North West Redwater's Sturgeon Refinery came online, which is the first refinery built in Canada since 1984.⁴
- According to Natural Resources Canada, Canadian production of petroleum products reached 1.9 million b/d in 2018.⁵ Most petroleum products are refined into motor gasoline (42%) and diesel fuel oil (30%).⁶

Exports and Imports

- Nearly all of Canada's crude oil exports were sent to the United States in 2018 (see Figure 3). Currently, the largest regional market in the United States for Canadian crude oil exports is the Midwest where almost all Canadian crude oil exports originate from Western Canada.

Figure 3. Canada crude oil exports by destination, 2018



 Source: BP Statistical Review of Energy, 2019

- Canada is the largest source of U.S. crude oil and refined products imports. Crude oil imports from Canada accounted for 48% of total U.S. crude oil imports in 2018, averaging 3.7 million b/d. Refined products imported from Canada accounted for 582,000 b/d, or 27% of total U.S. petroleum product imports.
- Currently, producers face a complex set of market and logistical challenges. Oil supply in Western Canada exceeds transport capacity of pipelines serving external markets. As export pipelines operate at full capacity and timing of new capacity remains uncertain, producers are

increasingly relying on rail transportation to deliver incremental production to market. The highest monthly volume imported to the United States from Canada was in January 2019 at 406,000 b/d, compared with a total average of 238,000 b/d in 2018.

Natural Gas

Canada is one of the world's largest producers of dry natural gas and is the source of most U.S. natural gas imports.

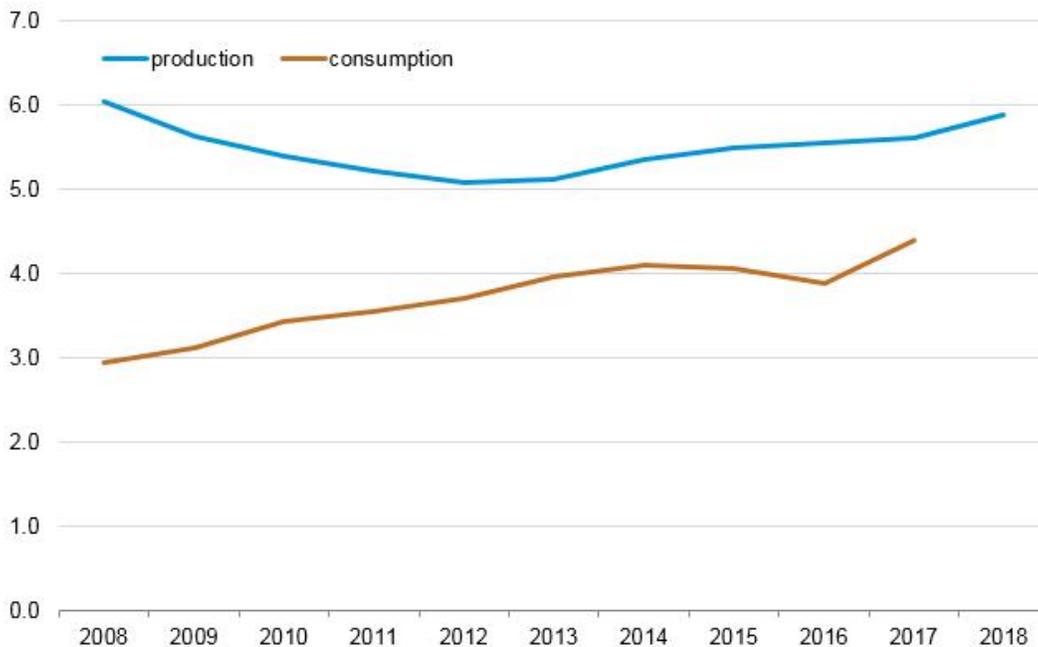
Reserves

- According to the *Oil & Gas Journal*,⁷ Canada held 72 trillion cubic feet (Tcf) of proved natural gas reserves at the end of 2018. Most of Canada's natural gas reserves are traditional resources in the Western Canadian Sedimentary Basin (WCSB), including those associated with the region's oil fields. Other areas with significant natural gas reserves include offshore fields near the eastern shore of Canada (primarily Newfoundland and Nova Scotia), the Arctic region, and the Pacific coast.

Production and Consumption

- In 2018, Canada produced 5.9 Tcf of dry natural gas and was the fourth-largest producer behind the United States, Russia, and Iran (see Figure 4). Most of Canada's natural gas production occurs in the prolific WCSB. Although Canadian production of conventional natural gas has been declining, production of Canadian unconventional natural gas has been rising.

Figure 4. Canada's dry natural gas production and consumption
trillion cubic feet



Source: U.S. Energy Information Administration, based on the National Energy Board

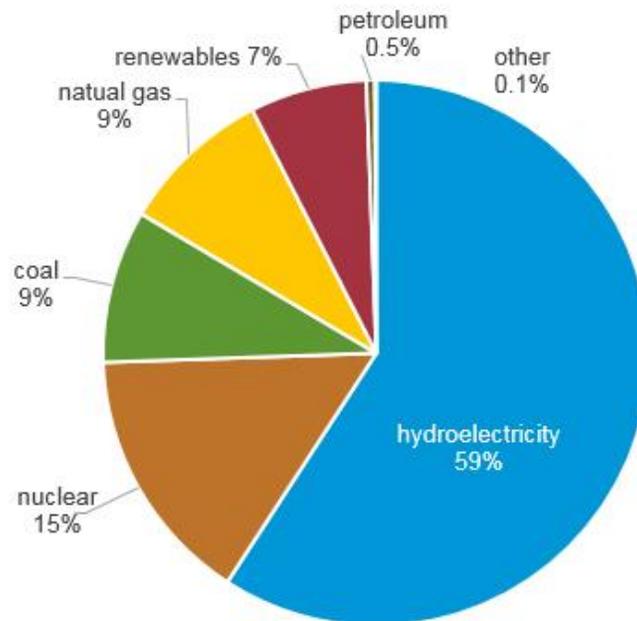
Exports

- Almost all of Canada's natural gas exports go to the United States. In 2018, 97% of all U.S. natural gas imports came from Canada. Most of Canada's natural gas exports to the United States originate in Western Canada and are shipped to U.S. markets in the West and Midwest regions.

Electricity

- Canada generated an estimated 651 billion kilowatthours (kWh) of electricity in 2017, of which about 60% was hydroelectric. Only China and Brazil produce more hydroelectricity than Canada.⁸ Fossil fuel and nuclear plants satisfy most of Canada's electricity needs not met by hydroelectricity (see Figure 5).

Figure 5. Electricity generation by fuel, 2018



 Source: BP Statistical Review of Energy, 2019

Trade

- The United States imported 52 million megawatthours (MWh) of electricity from Canada in 2018, primarily into the Northeast and Midwest, and exported 73 million MWh, nearly all of which was from the Pacific Northwest. Canada is a net exporter of electricity to the United States, which accounts for a small, although locally important, share of bilateral trade.

Coal

As government policy attempts to lower domestic coal consumption, up to 50% of Canada's coal production is exported.

Reserves

- Canada's total proved coal reserves stood at about 6.6 billion short tons in 2018.⁹ More than 60% of the reserves are anthracite and bituminous coal. The remaining reserves are subbituminous and lignite coal.¹⁰ Coal resources are located across the country, but they are actively mined and produced in only Alberta, British Columbia, and Saskatchewan.

Production and consumption

- In 2017, Canada produced 68 million short tons of coal, a slight increase compared with the previous year. About 50% of Canada's coal production is consumed domestically, a significant departure from more than a decade ago when Canada consumed nearly all of its domestic coal production.
- In 2018, 49% of coal consumed in Canada was metallurgical coal used for steel manufacturing, and 51% was thermal coal used for electricity generation. Coal generates 9% of total electricity in Canada. In 2018, the government of Canada announced regulations to phase out traditional coal-fired electricity by 2030.¹¹

Trade

- Canada exports about half of its coal production. In 2018, Canada was the world's third-largest exporter of metallurgical coal after Australia and the United States.¹² Most of Canada's coal exports go to Asia.

Notes

- In response to stakeholder feedback, the U.S. Energy Information Administration has revised the format of the *Country Analysis Briefs*. As of January 2019, updated briefs are available in two complementary formats: the Country Analysis Executive Summary provides an overview of recent developments in a country's energy sector, and the Background Reference provides historical context. Archived versions will remain available in the original format.
- Data presented in the text are the most recent available as of October 7, 2019.
- Data are EIA estimates unless otherwise noted.

¹ Oil & Gas Journal, *Worldwide Reserves*, January 1, 2019.

² Canadian Association for Petroleum Producers, [2019 Crude Oil Forecast, Markets and Transportation](#).

³ Canadian Association for Petroleum Producers, [2019 Crude Oil Forecast, Markets and Transportation](#).

⁴ Canadian Association for Petroleum Producers, [2019 Crude Oil Forecast, Markets and Transportation](#).

⁵ Natural Resources Canada, [Petroleum products facts](#).

⁶ Natural Resources Canada, [Petroleum products facts](#).

⁷ Oil & Gas Journal, *Worldwide Reserves*, January 1, 2019.

⁸ BP *Statistical Review of Energy*, 2019.

⁹ BP *Statistical Review of Energy*, 2019.

¹⁰ BP *Statistical Review of Energy*, 2019.

¹¹ Natural Resources Canada, [Coal facts](#).

¹² Natural Resources Canada, [Coal facts](#).